

Applicant: Edward T. Mol
Page 2 of 11

For: INTERWOVEN BELT FABRIC

AMENDMENTS TO THE SPECIFICATION

On page 1, after the title and prior to the Field of the Invention, kindly insert the following section:

CROSS-REFERENCE TO RELATED APPLICATIONS

This application claims the benefit of International Patent Application No. PCT/US03/37015 filed November 18, 2003.

10/543194

JC17 Rec'd PCT/PTO 21 JUL 2005

DETAILED DESCRIPTION

Kindly amend the Detailed Description to read as follows:

Shown in Fig. 1 is a section of conveyor belting material 100 comprising a fabric layer 101 and a cover layer 102. The cover layer 102 may be a standard rubber or plasticized polyvinyl material or the like. One embodiment of a belting fabric 100 in accordance with the invention is illustrated in Fig. 2 in an enlarged side elevational view of a portion of the belt 100. The belting fabric of Fig. 2 includes an upper layer of monofilament weft yarns 105 and a lower layer of monofilament weft yarns 106. The individual weft yarns of layer 105 are disposed in substantial alignment with individual weft yarns of layer 106, forming a plurality of couplets, 110 through 119. The monofilament weft yarns preferably have a diameter of approximately 0.3 mm.

The two layers of weft yarns 105, 106 are separated by inelastic middle warp yarns 107 in accordance with the invention. The middle warp yarns are sufficiently straight and inelastic to bear loads under tension without twisting or stretching. Each middle warp yarn 107 is preferably formed of PET having a denier of 550, although any polymer, rendered effectively inelastic, will suffice. The middle warp yarns 107 are heat set under tension to make them straight and inelastic.

A plurality of binder warp ~~yams-yarns~~ 120,121,122 are woven on the weft yarns to form a belt fabric. The fabric layer 101 is woven in a repeating weaving pattern wherein three binder warp yarns 120, 121, and 122 are woven through a plurality of adjacently disposed couplets formed from aligned pairs of weft yarns of layers 105 and 106, in a specified pattern. In this pattern the first binder warp yarn 120 extends over a first aligned couplet of weft yarns 110 and under second and third couplets 111, 112, respectively; the second binder warp yarn 121 extends over the second couplet 111 and under third and fourth couplets 112,113, respectively; and the third binder warp ~~yam-yarn~~ 122 extends over the third couplet 122 and under fourth and fifth couplets 113,114, respectively.

The specific pattern of the warp yarns shown in Fig. 2 is further illustrated in Fig. 3 in which the pattern of a single binder warp yarn 120 is shown separate from the other binder warp yarns.

Fig. 4 depicts an alternate embodiment of a belt 200 in accordance with the invention wherein the fabric 201 comprises four binder warp yarns 220, 221, 222, and 223 woven into two layers of weft yarns 206, 207. The layers of weft yarns 206, 207 are separated by inelastic middle warp yarns 208 in accord with the invention. As before, each middle warp yarn ~~107-208~~ is preferably formed of PET having a denier of 550, although any polymer, rendered effectively inelastic, will suffice. The middle warp yarns ~~107-208~~ are heat set under tension to make them straight and inelastic.

The binder warp yarns 220, 221, 222, 223 are preferably 1,000 denier yarns and the weft yarns 206, 207 are preferably approximately 0.3 mm monofilament yarns. The fabric 201 is woven in a repeating weaving pattern wherein four binder warp yarns 220, 221, 222 and 223 are woven in a specified pattern through a plurality of couplets formed from pairs of aligned weft yarns of layers 206, 207. In this pattern the first binder warp yarn 220 extends over a first aligned couplet of weft yarns 210 and under the second, third and fourth couplets 211, 212 and 213, respectively; the second warp yarn 221 extends over the second couplet of weft yarns 211 and under the third, fourth and fifth couplets 212, 213 and 214, respectively; the third warp yarn 222 extends over the third couplet of weft yarns 212 and under the fourth, fifth and sixth couplets 213, 214 and 215, respectively; and the fourth warp yarn 223 extends over the fourth couplet of weft yarns 213 and under the fifth, sixth and seventh couplets 214, 215 and 216, respectively.

The specific pattern of the binder yarns of Fig. 4 is further illustrated in Fig. 5 in which the pattern of a single binder warp yarn, yarn 221, is shown separate from the other binder warp yarns.

Belt material in accordance with the present invention is preferably manufactured by feeding the woven belt fabric, e.g., ~~100, 200~~101, 202, from a roll of the fabric into a well-known belt coating apparatus. Such apparatus typically includes a feeding mechanism extending the belt between a roller and a coating knife. Liquid PVC, such as a well-known product referred to in the trade as "Plastisol," is applied in a standard fashion. The belt material with the newly applied coating is then fed into an oven and

heated by infrared lamps or the like to dissolve the applied PVC. After passing through the oven, the belt material with the applied PVC is fed between a roller and a cooling drum while cooling the belt. This causes the PVC to be forced into cavities in the woven material.

One advantage of the belting fabric is that it has cavities of substantial size that provide for proper adhesion of the PVC layer to the fabric. As a result, glue lining required for belts made of prior art belt fabrics is not required. The application of such a glue lining requires that the belt material be fed through a glue application mechanism, similar to the PVC application mechanism. Accordingly, a belt made in accordance with the present invention is substantially less expensive to manufacture. More importantly, however, the stronger middle warp yarns are believed to be the ones primarily under tension during operation of the belt. Since they are the load-carrying yarns, the upper and lower layers on either side of the middle warp yarns are under no load, ~~an-and~~ thus do not wear as quickly as belts of the prior art. The result is a more durable belt.